



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

EXPLORATIONS IN THE RUBBER DISTRICTS OF BOLIVIA.

BY

BARON H. ARNOUS DE RIVIÈRE.

In the year 1892 I wrote an article for the Geographical Society at the request of Judge Daly, president of said Society, upon my explorations in the Beni Province of Bolivia. That province, so long unknown, and yet containing so much treasure, had never been thoroughly explored, and there were no maps to be referred to.

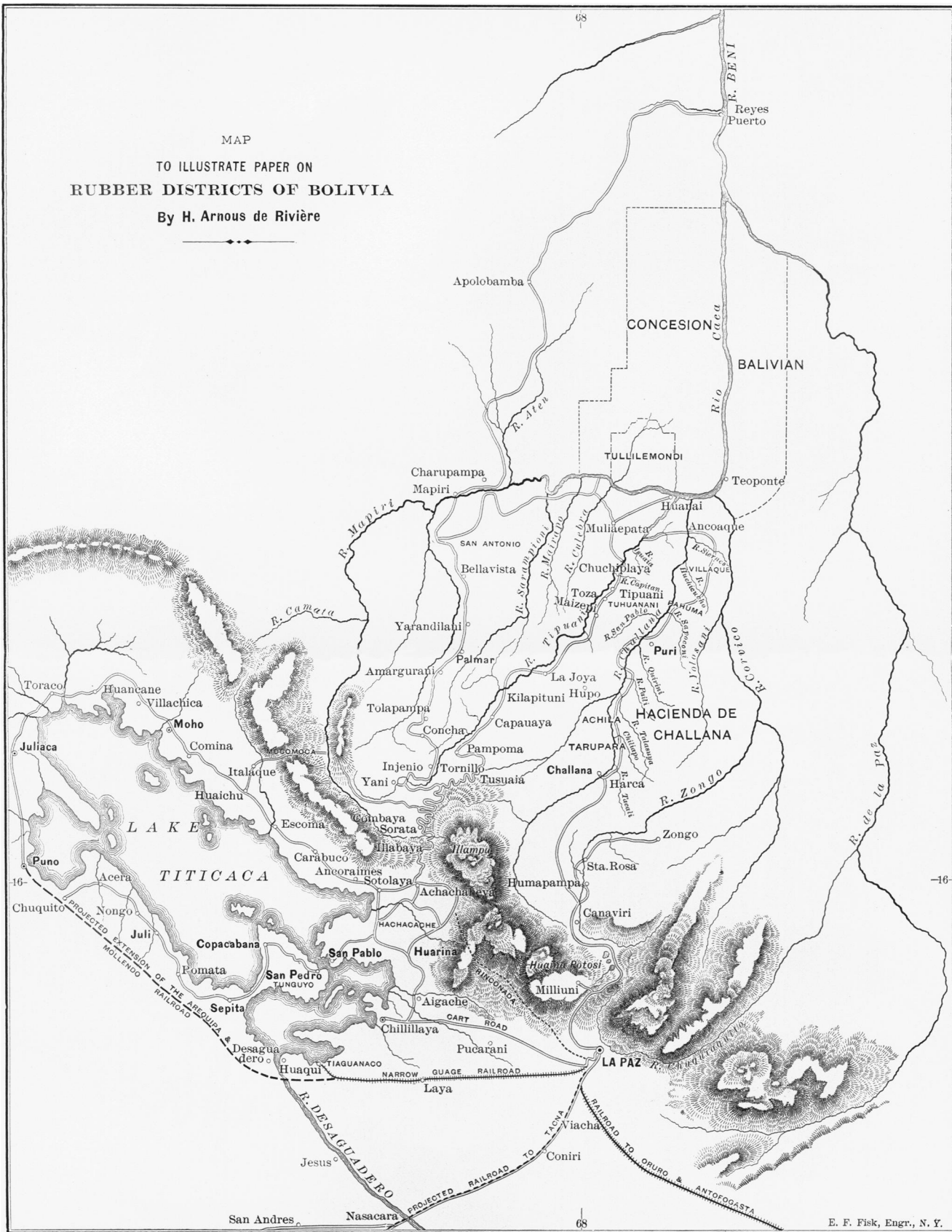
The principal object of the paper was to give an approximate description of the country and some maps indicating the course of the rivers, showing the necessity of cutting a road between the Beni and the Lake Titicaca.

At that time the main interest was the working of the gold gravel in the rivers and the culture of the *Calisaya* (quinine bark). This last culture was losing its importance more and more every year, because the quinine trees were getting scarce by the destructive way of cutting them down used by the Indians, and the planters were discouraged and gave up planting the trees when it was shown that the calisaya in India was yielding to the English its bark at a lower rate in production and freight.

As for the gold gravel, it was not worked to any extent, as the different enterprises had never been backed by sufficient capital or competent men. No attempt had been made to work the quartz veins, save, perhaps, in Poto, in the Cordillera north of Lake Titicaca, and in Carauaya, which is now a marvellous gold-yielding district, easily reached by the road leading from Juliaca to Azángaro and Sandia.

But it became rumored by those who were clearing the forest that gum trees (caoutchouc) were abundant and were wantonly cut down by the Indians and the settlers, who knew not how to extract the gum without killing the tree. Carlos Peña, who was working the hacienda of San Antonio, on the Villianoa stream, was, I believe, the first man on the Mapiri river who smoked the gum. The smoking is done by lighting a fire of the very fruit of the tree, which gives a dense smoke. The liquid gum is then spread on a wooden shovel in the form of a pancake and presented to the smoke. The pancakes, when well daubed with soot, are piled up one upon

MAP
TO ILLUSTRATE PAPER ON
RUBBER DISTRICTS OF BOLIVIA
By H. Arnous de Rivière



another until they form a mass weighing from 75 to 80 pounds, which is wrapped up in rawhide or heavy canvas. The smoking must be done within two or three days of the collecting or the juice granulates. The samples thus sent by different owners of the gum trees were a success, and all at once there was a demand for all that could be gathered.

The cutting down of the trees was strictly prohibited, and all along the Mapiri river and the Beni the Indians began tapping the trees and selling the gum in Sorata.

In Churumani, the big hacienda belonging to Sr. Goitia, Senator for La Paz, the calisaya (quinine) was almost abandoned, and all the labor directed to the gum.

The bark of the best Bolivian quality, treated in Europe, never gave more than eight per cent. of sulphate of quinine. It seems strange that no effort has ever been made to extract the sulphate in the country where it is produced, thus avoiding the payment of heavy freight on 92 per cent. of dead weight, besides damaging the quality by fermentation on the sea.

This is more remarkable when it is known that a great deal of sulphate is shipped from Europe to South America, where it commands a heavy price, Bolivia being the main producing country.

As soon as it was known that the house of Brayard had settled on the Madre de Dios, another French house (Devez) established itself lower down on the Mamoré, and later a German firm occupied Ribera Alta. The difficulty first encountered was the scarcity of hands, the Indians being very uncertain and unsteady—so much so that without giving any notice they would leave and float up or down the river on logs before their contract was at an end. The only way to keep them was to allow them to run in debt at the company's storehouse and to keep a guard who would watch and prevent their running away. But some of them, having managed to escape, told the northern Indians that it was not safe for them to navigate the river below the establishments, as they would be seized and turned into slaves.

All the gum obtained was shipped down the Mamoré and the Amazon, consigned in Pará and went to the European and United States markets under the name of Pará gum, when in reality it was Bolivian gum. It is difficult to understand that a product so easily packed, and in such demand, should be made to travel over three thousand miles, most of it through a country foreign to the production.

Both the railroads, that from Antofogasta to Oruro and the one

from Mollendo to Puno, have their termini only a hundred and fifty miles from the gum-producing country, and yet no serious effort has been made to build the proper roads from the Beni to the Pacific.

It was under those circumstances that in the year 1893 a company was formed with a capital of \$500,000, its object being to secure a Gum Alliance and to build a road under the patronage and with the help of Bolivia. This company was well organised, three of its directors being well-known gum brokers and the manager being thoroughly acquainted with the country and its resources.

The company was called the Beni Gum Company, and it was duly incorporated in New York.

An expedition was organised, all the machinery and the goods that could be of any use in the forest were purchased, packed and shipped to Mollendo. The manager and one of the gum brokers, as well as one of the directors, sailed for the Isthmus, and from Panama to Mollendo, and from there reached La Paz by Arequipa and Puno. Unfortunately, the manager was detained on the road, and only reached La Paz ten days after the others.

Now, some merchants in La Paz dreaded exceedingly the competition of the Yankee company—and with reason, for they could not bring on the market such a selection of goods as was coming. They united in trying to break up the Gum Company, taking advantage of the manager's absence to discourage the directors by telling them that they had been deceived; that there were no gum lands on which they could form an establishment; that the perils of the voyage to the Beni were such that only mad adventurers would attempt it; that the manager was one of these; and that, in fact, if they wanted an interest in gum, they could establish an agency in La Paz, offering their services.

When the manager arrived he learned that the directors in La Paz had telegraphed to the directors in New York their intention to break up the company, and, unfortunately, at the same time the chief broker became demented and had to be sent back to New York by the American Minister under a proper escort. The other director, having no desire to affront the "*perils*" of the trip to the Beni, remained in La Paz only the time necessary to deposit the goods in a German house, borrow money on such security, and return to New York. Shortly after the German house failed, and the company was ruined.

Had it fulfilled its programme it would now be worth millions, for this expedition had awakened the energies of the people, and a

great number petitioned for concessions from the Government for gum lands, which could then be obtained for the payment of taxes, and which are now worth thousands and hundreds of thousands pounds sterling. Rapidly the province was invaded by prospecting men, and the Government adopted a rather singular way of measuring out its concessions. A *pertenencia* (or claim) was not measured by the area but by the number of trees; one hundred and fifty being the unit. This may in the future be troublesome for neighbors.

Up to this time only the borders of the different streams are in exploitation. It is yet difficult to penetrate in the wild forest, where there are no paths. It is time yet to obtain possession or control of extensive gum-bearing land, but this opportunity will soon be lost.

At present the traffic to the Beni and to La Paz is concentrated on the Pacific Ocean at the port of Mollendo—a miserable and unsafe open harbor, but the terminus of the Arequipa and Puno railroad. From Puno the goods and passengers navigate the Lake Titicaca and land in Chillillaya or Desaguadero.

In Desaguadero there is an indirect path going about 100 kilometres to La Paz by Huachi and Laya, and the Government has just contracted with French capitalists and engineers to lay down a railroad that will do away with the very badly-kept road from Chillillaya to La Paz.

When I left, six months ago, there were accumulated in the Custom-house of Chillillaya over fifty thousand quintals of goods to be transported to La Paz. All the available means of transport could not move more than three thousand to four thousand quintals per month, and the accumulated deposit was augmenting at the rate of two thousand or three thousand more per month. The railroad will be a success, and will rapidly pay for its cost.

The new port of Huachi, on the Desaguadero, will be in communication with the Corocoro district, and will have the transport of the copper ore.

The actual miserable cart-road from Chillillaya to La Paz will be abandoned, and will only be used to reach Sorata by Hachacache.

Sorata will remain the deposit of such goods and the traffic coming from the central northeast fields of the Mapiri river.

As soon as the railroad is opened from Desaguadero to La Paz there will be built a connection from Puno to Desaguadero, and the navigation of the lake will be considerably shortened.

We must now go back to the labor question, for it is the basis of

the gum interest. We have said that it was impossible to obtain sufficient labor from the native Indians.

The Aymara Indians live on the high lands west of the Cordillera, and do not endure the tropical climate of the eastern low land. They will not contract for more than a few weeks at a time. An experiment was made to introduce Japanese labor, but it did not prove successful. That class of immigrants is very troublesome and unreliable. The negroes are the only people that will accept steady occupation. We had the experiment made in the black colony of Tipuani. The little village was entirely composed of black men of the third generation, originally runaway slaves from Brazil. They were the only men in the Mapiri valley on whom we could depend for clearing, cultivating or building. The Indian does not work—he fishes, hunts and navigates the streams, and lives by the fruits he raises and the gold he washes from the banks of the streams.

I believe that never was there such an opportunity offered to the black race to form a prosperous colony and be independently happy.

The advantages offered to the emigrants are the following:

First: A contract between the emigrant and the employer for four consecutive years, to date from the day of signature of said contract;

Second: All travelling expenses paid to the place of labor;

Third: Four acres of land given to each laborer to establish his house and garden;

Fourth: All material and facilities given free for the erection of house and clearing the site. If several in a family, all advantages to be multiplied by the number of working hands, women and boys above 15 years to be considered as able laborers (the work is light and easy);

Fifth: Wages in money for each worker, twenty dollars per month;

Sixth: At the expiration of the four-year contract the house and land belong definitely to the emigrant.

Full protection from the Government according to the emigration and colonial laws of the country. The emigrants can retain their rights as American citizens if they come from the United States, and as such can claim protection from the United States Minister residing in La Paz.

The work, I said, is an easy and light one. It consists in clearing the wild forest by cutting down the trees that are not gum and

fruit bearers, such as coffee, cacao, quinine bark, orange, cotton, etc. The gum trees are tapped like maple sugar or acacia trees.

The men can also be employed in cutting and clearing roads and in washing gold; the girls being the best fitted to work the pan.

The workmen begin work at 5 A. M. and knock off at 12 or 1 P. M. They have all the rest of the time to themselves.

An able man or woman laborer can easily gather one hundred and fifty pounds of gum per month.

The cost of wages and expenses is fifty-eight Bolivian dollars per month. The market price of gum, paid at the place of production, is one hundred and eighty Bolivians per quintal. Therefore, one quintal and a half, produce of one workman's labor, will yield two hundred and seventy Bolivians, giving monthly a clear profit of two hundred and twelve Bolivians per laborer.

The Bolivian dollar is, more or less, worth fifty cents American money; therefore, the product will be one hundred and thirty-five dollars, the cost fifty-eight Bolivians (twenty-eight dollars), and the profit one hundred and seven American dollars. One thousand emigrants will pay monthly about one hundred thousand dollars (\$100,000) American money.

The production of gum coming from the Beni to the Pacific is not yet well known; but it develops rapidly, and it is expected, as soon as the projected roads are in operation, to multiply in proportion to the demand. On the other gum-fields—Peruvian and Brazilian—in the year 1894, the production in February was as follows:

	KILOS.
On the Purus River..	527,571
On the Jurua..	280,249
On the Javari..	200,278
On the Madeira..	165,003
On the Rio Negro..	50,937
On the Solimões..	43,196
On the Jutahy..	11,380
On the Amazonas..	830
Total..	1,279,444

or one thousand two hundred and seventy-nine and one-half tons.

Since then the demand and the price have greatly advanced.

Other countries are now awakening to the great resources available in the gum-gathering, and they are planting and cultivating wherever the soil is favorable. New Granada, on its low lands of the Darien, Venezuela, the Guianas, and Ecuador will compete in

the market. But it takes twenty years to develop a rubber tree, and until then the forests of Peru, Bolivia and Brazil must supply the demand.

A year ago we received from the acting Governor of Surinam the following letter and document:

SURINAM.

PARAMARIBO, November 6th, 1899.

SIR:

I have the honour to ask your attention for the following concerning the trees producing India-rubber or caoutchouc, growing in the South American republics, Brazil, Peru, Bolivia, and Ecuador.

As you will perceive from a report by the Superintendent of the Botanical garden at Kew (Kew Bulletin of Miscellaneous Information, Nos. 149 and 150 of 1899), a copy of which I have the honour to enclose herein, these trees belong to the species of *Hevea* and *Castilloa*. The rubber from the *Castilloa*, called *Cauchó*, of which caoutchouc is probably an expanded form, is collected by felling the tree, and that from *Hevea* called *Yebe*, *Yeve* or *Heve*, by tapping.

With regard to the fact that the demand for caoutchouc is increasing every year, it seems an important matter for a colony like Surinam to try to cultivate those caoutchouc-producing trees.

In order to make a trial with the cultivation of the said trees in our Botanical Garden at Paramaribo, I beg to ask your kind intermediation to forward to me if possible some seeds and young plants of *Hevea* and *Castilloa*.

In case you succeed in getting young plants the best packing to guard them against injury, as I am informed, is a tin-plate box filled with damp saw-dust.

I hope you will be so kind as to help me in this matter. The expenses which eventually are to be made in procuring and forwarding the seeds and plants will of course be refunded.

I have the honor to be Sir,

Your obedient servant,

Acting Governor of Surinam.

Afschrift.

(enclosure.)

Royal Gardens, Kew,
May 23rd, 1899.

SIR:

I have the honour to acknowledge the receipt of your letter of May 12th transmitting a copy of Consul Churchill's report on a kind

of India rubber exported from Peru, through Pará, under the name of Caucho.

2. Caucho, of which Caoutchouc is probably an expanded form, has been hitherto identified with India rubber *par excellence*, the produce of one or more species of *Hevea* indigenous to the basin of the Amazon, and exported from Pará. According to the information now received, the Caucho tree of Peru is a *Castilloa*. One or more species of this genus produces the India rubber of Central America. The South American *Castilloa* has been known to extend as far as Ecuador, where it is called "Yebe," otherwise Yeve or Heve. According to Aublet this latter name was given in Northern Ecuador to a species of *Hevea*, and in founding that genus he desired to name it accordingly. In the Amazon basin the name for the species of *Hevea* is "Seringa," and in Central America for those of *Castilloa* "Ule," or "Tunac" (see Kew Bulletin, 1898, 141, 142). Perhaps in Western South America the names Caucho and Yebe are applied indiscriminately to rubber-producing trees.

3. According to a report by Mr. M. B. Adamson, H.B.M. Consul at Iquitos, dated December 24, 1898, and published in the transactions of the Liverpool Geographical Society for the same year, Peru has two kinds of rubber-producing trees: Caucho, which appears to belong to *Castilloa*, and Yebe to *Hevea* (pp. 39, 40). Both Mr. Adamson and Mr. Churchill agree that the rubber is extracted from the caucho tree by felling. The Yebe is always tapped. The former process results in a district being worked out. In consequence, according to Mr. Adamson, many of the "Caucheros," or rubber collectors, are working on Brazilian rivers, where the supply is yet more plentiful.

4. It is not, however, necessary to fell the *Castilloa* trees to collect the rubber. The method of tapping is minutely described in a report in the United States Consular reports for May, 1899 (pp. 150 and 151).

The estimated yield per tree is much smaller than that given in Sir Henry Deling's report, as to which I addressed some inquiries to the Foreign Office in my letter of April 14th, 1897.

I am, Sir,

Your obedient servant,

W. F. THISELTON DYER.

There are no signs just now of any diminution in the demand for rubber, and, therefore, for years to come the gathering of gum will be a source of great fortune for those who will go to work at once.

Importation of black labor and opening of thoroughfares—removal of the obstacles in the rivers—establishment of laborers' villages and of working capital—will give enormous results.

Companies will be formed capitalized at the actual low value of the forest lands, and they will obtain dividends of one hundred per cent.

The country has been calumniated so far as its salubrity goes. It is not true that fever is prevalent. It attacks drunkards and men who lead disorderly lives; but those careful of their health can live there as well as elsewhere.

(To be continued.)